Claims

1. A method for producing bores in workpieces of electrically conductive material, in particular injection ports (11) in injection nozzles (10) of fuel injection systems for motor vehicles, in which method, by means of an erosion wire (12) forming an electrode, material in the workpiece forming the counterelectrode is removed in a targeted way by spark erosion, characterized in that the erosion wire (12) is actively excited to a defined vibration, and that the form of vibration is established by targeted variation of the vibration excitation in accordance with the desired bore hole shape.

2. The method of claim 1, characterized in that the vibration excitation of the erosion wire (12) is performed on one end (122) of the wire.

3. The method of claim 2, characterized in that the vibration excitation of the erosion wire (12) is performed separately in two orthogonal axes (x, y) located in the same plane, and that to attain the desired form of vibration of the erosion wire (12), the frequencies and the ratio of frequency to amplitude of the two vibration excitations as well as the phase displacement between the two vibration excitations in both orthogonal axes are controlled.

4. The method of claim 3, characterized in that to attain a bore hole of circular cross section, the vibration excitations in the two orthogonal axes (x, y) are performed with the same amplitude and with a phase displacement ($\Delta\varphi$) of 90°.

5. The method of claim 3, characterized in that to create a bore hole of elliptical cross-sectional area, the vibration excitations in the two orthogonal axes (x, y) are performed with different amplitudes and with a phase displacement ($\Delta\varphi$) of 90°.

6. An apparatus for performing the method of one of claims 3-5, characterized in that the end (122) of the erosion wire (12) is received in a fastening unit (13), which is guided displaceably along two orthogonal axes (x, y) oriented transversely to the longitudinal axis of the erosion wire (12), and that two actuators (14, 15) engage the fastening unit (13) for separate oscillating displacement of the fastening unit (13) along the two orthogonal axes (x, y).

7. The apparatus of claim 6, characterized in that the actuators (14, 15) have piezoelectric elements (23), which upon application of an alternating voltage undergo a defined change in length in one direction and the other.

8. The apparatus of claim 7, characterized in that the actuators (14, 15) are each formed by a piezoelectric stack (17, 18), in which a plurality of piezoelectric elements (23) are disposed in contact with one another in the direction of their change in length.

9. The apparatus of claim 6, characterized in that the actuators (14, 15) are embodied as electromechanical vibration motors.

10. The apparatus of claim 6, characterized in that the actuators (14, 15) are embodied as ultrasonic transmitters.